IN THE SPECIFICATION

Please replace paragraph [035] with the following amended paragraph:

Segmentation logic 330 may be used to segment the various body parts. Segmentation is an operation that assigns all image pixels that share some trait in common to a single class. As an example, segmentation algorithms such as described in Patent [[#]] No. 5,452,367 by Bick et al~~,~~.; may be used to find the skin line of the breast in Fig. 8A and 8B, thus assigning all pixels inside the skin line to the "breast region,"~~,~~ and all pixels outside to be in the background region. A further example that would be relevant in chest radiography is code that would segment the lung fields in a chest image, such as described by Bram Van Ginneken (Bram van Ginneken, Computer-Aided Diagnosis in Chest Radiography, Ph.D Thesis, Image Sciences Institute, University Medical Center Utrecht, Utrecht, Netherlands). Segmentation algorithms may be used to further segment the chest image into mediastinem, heart, diaphragm, ribs, etc. In other medical images, segmentation might be used to separate different organs in the image.

Please replace paragraph [042] with the following amended paragraph:

Tone scale is a mathematical mapping from the invisible physical signal (such as an [[x]]X-ray transmittance) to the visible image signal. This is described, for example in L. Barsky et al., "New automatic tone scale method for computed radiography", Proc. SPIE, 3335, 164-178, 1998. The characteristic curve shown in Fig. 9A is typical of the tone scale mapping for diagnostic radiography. For diagnostic radiography, the compromise between visual contrast and dynamic range usually imposes serious constraints on the desirable tone scale. The optimal tone scale depends on the

observer's interest, the characteristics of the display system, and the existence of an object that is important to see.

Please replace paragraph [066] with the following amended paragraph:

For example, in mammography, the image can be acquired with variable x-ray energy (Kvp), and variable exposure (mas). The Kvp will affect the contrast and the exposure will change the overall level of the image. It would be beneficial to enable the accuracy of detection to be somewhat immune to these variables. As well as allowing operation in this more robust manner, the algorithm can, if desired, exploit the unique advantages of a particular detection system. A preferred method of performing this normalization and contrast response for two inputs – analog film and digital, will be described. The physics of imaging used in this section can be found in a standard reference such as Christensen et al. (An Introduction to the Physics of Diagnostic Radiology, Edward Christensen, Thomas Curry, James Dowdey, Lea & Febiger, Philadelphia~~.~~).

Please replace paragraph [067] with the following amended paragraph:

In general, segmentation is the separation of the various elements in an image. Segmentation is an operation that assigns all image pixels that share some trait in common to a single class. As an example, segmentation algorithms such as described in Patent [[#]] No. 5,452,367 by Bick et al., may be used.

Please replace paragraph [096] with the following amended paragraph:

The actual pixel size and number of pixels in an image can be stored in a header associated with the image, or, as in our preferred embodiment, they can be stored in the DICOM header that is sent with the image into the digital system. The operation of

turning the incoming image resolution into the resolution used by the internal algorithm of the digital system is essentially that of "resampling" the incoming array into a different output array, through smoothing or interpolation filters, see for example a standard reference for such image processing operations (Anil K. Jain, Fundamentals of Digital Image Processing, Prentice Hall~~.~~).

Please replace paragraph [0107] with the following amended paragraph:

This shows that the flux (I) of x-rays passing through an object is proportional to the flux incoming (I_o), and decreases exponentially with μ, the attenuation of the object, and z, the thickness of the object. The attenuation is a function that decreases with increasing energy, and hence the same object will have less contrast when exposed to higher energy x-rays. The following discussion will show how the pre-processing functions can correct the contrast and create a particular response that is desired. Note that the above discussion is slightly simplified, assuming mono-energetic x-rays. However, the basic principles discussed above do not change for other types of x-rays. The above calculations can be modified, as would be understood by one skilled in the art, to explain standard x-ray behavior.

Please replace paragraph [0107] with the following amended paragraph:

In order to map this response to the form of equation 3, three steps are taken:

a) raw pixel values are converted to Log pixel value

b) the contrast or slope is adjusted to the "canonical" slope

c) the response is normalized (the level is adjusted) ~~of~~ to the "canonical" level or data range.

Please replace paragraph [0112] with the following amended paragraph:

This response is going to be converted into the “canonical” slope desired. This can be accomplished by multiplying by a constant G chosen empirically to match slopes with the desired “canonical” response of equation 3:

(Equation 7~~6~~) $PV = \log(PV_{max}/input) * PV_{max}'/\log(PV_{max}) * G$

Please replace paragraph [0124] with the following amended paragraph:

Next, consider the pre-processing changes required to accommodate a different digital detector, with a different gain. Suppose two detectors with ~~responses~~ different responses are used. The responses are given by:

$Input_1 = g_1 * E$

$Input_2 = g_2 * E$

Using equation 8 then gives:

$PV_1 = 4095G - \ln(input_1) * G - X = 4095G - \ln(g_1E) * G - X$

$PV_2 = 4095G - \ln(input_2) * G - X = 4095G - \ln(g_2E) * G - X$

So

(Equation 12) $PV = PV_2 - PV_1 = \ln(g_2/g_1) * G$

Please replace paragraph [0135] with the following amended paragraph:

The post-processing module applies a unique tone-scale to the image based on the finding of the computer –aided detection module or pre-processing module before it. As explained above, Equation 1, showing film OD as a function of log relative exposure, is one example of a “tone scale”. The tone scale is broadly speaking a mapping of incoming x-ray exposure to a visual display according to some criterion such as optimal image quality or acceptability. This method obtains a new tone scale based on the requirement of visualizing a suspicious region or feature that is in a part of the data in the (hard to visualize) non-linear region of Fig. 8A, usually representing dense anatomy.